

**ABSTRACT**

An air separator oxygen gas capable of producing oxygen gas in an energy-saving manner, thereby remarkable downsizing can be realized. The air separator includes an air compressor (1) for taking in air from the outside and compressing it, first adsorption towers (2,3) for concentrating oxygen gas that is contained in the air compressed by the air compressor (1), an oxygen/air compressor (11) for further compressing oxygen-rich compressed air (X) passed through the first adsorption towers (2,3), a main heat exchanger (21) for cooling oxygen-rich compressed air (Y) passed through the oxygen/air compressor (11), and a high-pressure rectification tower (23) and a low-pressure rectification tower (28) for taking out oxygen gas by separating the oxygen-rich compressed air (Y) passed through the main heat exchanger (21) so as to be cooled to a low temperature by utilizing differences in boiling points of elemental gases.